

ABSTRACT OF THE DISCLOSURE

The present invention provides an ancillary electrical component in very close proximity to a semiconductor device, preferably mounted directly to the semiconductor device. In one preferred embodiment, the ancillary electrical component is a capacitor. In a preferred embodiment, a terminal is provided on the semiconductor device such that the capacitor can be electrically connected directly to the terminals, as by soldering or with conductive epoxy. Connecting the capacitor between terminals of a power loop provides superior noise and transient suppression. The very short path between the capacitor and the active circuit provides for extremely low inductance, allowing for the use of relatively small capacitors. The semiconductor device then is connected to an electronic device such as a PC board for further connection to other circuitry. One particularly preferred mode of connection is by incorporating resilient, free-standing contact structures on the same semiconductor device, with the structures standing farther away from the semiconductor and the capacitor. Other useful connectors include providing similar resilient, free-standing contact structures on the other device, then positioning the semiconductor over the resilient contacts and securing the two devices together. A socket with such resilient structures is particularly useful for this application. In an alternative preferred embodiment, the capacitor and resilient contacts all are incorporated in the second device, such as a socket. In one aspect of the invention, the ancillary electrical component may include a travel stop structure which defines a minimum separation between the semiconductor and a substrate such as a printed circuit board.